



59331-D-PCT-US.ST25  
SEQUENCE LISTING

<110> OLSON, WILLIAM C  
SCHULKE, NORBERT  
GARDNER, JASON  
PAUL, MADDON J

<120> PARTICLE-BOUND HUMAN IMMUNODEFICIENCY VIRUS ENVELOPE  
GLYCOPROTEINS AND RELATED COMPOSITIONS AND METHODS

<130> 2048/59331-D-PCT-US

<150> 60/370,410

<151> 2002-04-05

<150> PCT/US02/28332

<151> 2002-09-06

<160> 22

<170> PatentIn version 3.3

<210> 1

<211> 100

<212> PRT

<213> Human immunodeficiency virus type 1

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Glu Ala Thr Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Asp  
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Thr Glu Val His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp  
35 40 45

Pro Asn Pro Gln Glu Val Val Leu Glu Asn Val Thr Glu His Phe Asn  
50 55 60

Met Trp Lys Asn Asn Met Val Glu Gln Met Gln Glu Asp Ile Ile Ser  
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85 90 95

Val Thr Leu Asn  
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<213> Human immunodeficiency virus type 1

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Arg Arg Val Val Gln Arg Glu  
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<213> Artificial sequence

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 <212> PRT  
 <213> Human immunodeficiency virus type 1

<400> 11

Ala Pro Thr Lys Ala Lys Arg Arg Val Val Gln Arg Glu Lys Arg  
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&lt;210&gt; 13

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&lt;212&gt; PRT

&lt;213&gt; Human immunodeficiency virus type 1

&lt;400&gt; 13

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&lt;212&gt; PRT

&lt;213&gt; Artificial sequence

&lt;220&gt;

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&lt;400&gt; 14

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&lt;210&gt; 15

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&lt;212&gt; PRT

&lt;213&gt; Human immunodeficiency virus type 1

&lt;400&gt; 15

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&lt;210&gt; 16

&lt;211&gt; 10

&lt;212&gt; PRT

&lt;213&gt; Human immunodeficiency virus type 1

&lt;400&gt; 16

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&lt;211&gt; 1929

&lt;212&gt; DNA

&lt;213&gt; Human immunodeficiency virus type 1

&lt;400&gt; 17

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&lt;210&gt; 18

&lt;211&gt; 643

&lt;212&gt; PRT

&lt;213&gt; Human immunodeficiency virus type 1

&lt;400&gt; 18

Val Glu Lys Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys  
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Glu Ala Thr Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Asp  
 20 25 30

Thr Glu Val His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp  
 35 40 45

Pro Asn Pro Gln Glu Val Val Leu Glu Asn Val Thr Glu His Phe Asn  
 50 55 60

Met Trp Lys Asn Asn Met Val Glu Gln Met Gln Glu Asp Ile Ile Ser  
 65 70 75 80

Leu Trp Asp Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys  
 85 90 95

Val Thr Leu Asn Cys Lys Asp Val Asn Ala Thr Asn Thr Thr Asn Asp  
 100 105 110

Ser Glu Gly Thr Met Glu Arg Gly Glu Ile Lys Asn Cys Ser Phe Asn  
 115 120 125

Ile Thr Thr Ser Ile Arg Asp Glu Val Gln Lys Glu Tyr Ala Leu Phe  
 130 135 140

Tyr Lys Leu Asp Val Val Pro Ile Asp Asn Asn Asn Thr Ser Tyr Arg  
 145 150 155 160

Leu Ile Ser Cys Asp Thr Ser Val Ile Thr Gln Ala Cys Pro Lys Ile  
 165 170 175

Ser Phe Glu Pro Ile Pro Ile His Tyr Cys Ala Pro Ala Gly Phe Ala  
 180 185 190

Ile Leu Lys Cys Asn Asp Lys Thr Phe Asn Gly Lys Gly Pro Cys Lys  
 195 200 205

Asn Val Ser Thr Val Gln Cys Thr His Gly Ile Arg Pro Val Val Ser  
 210 215 220

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Thr Gln Leu Leu Leu Asn Gly Ser Leu Ala Glu Glu Glu Val Val Ile  
 225 230 235 240  
 Arg Ser Asp Asn Phe Thr Asn Asn Ala Lys Thr Ile Ile Val Gln Leu  
 245 250 255  
 Lys Glu Ser Val Glu Ile Asn Cys Thr Arg Pro Asn Asn Asn Thr Arg  
 260 265 270  
 Lys Ser Ile His Ile Gly Pro Gly Arg Ala Phe Tyr Thr Thr Gly Glu  
 275 280 285  
 Ile Ile Gly Asp Ile Arg Gln Ala His Cys Asn Ile Ser Arg Ala Lys  
 290 295 300  
 Trp Asn Asp Thr Leu Lys Gln Ile Val Ile Lys Leu Arg Glu Gln Phe  
 305 310 315 320  
 Glu Asn Lys Thr Ile Val Phe Asn His Ser Ser Gly Gly Asp Pro Glu  
 325 330 335  
 Ile Val Met His Ser Phe Asn Cys Glu Gly Glu Phe Phe Tyr Cys Asn  
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 Ser Thr Gln Leu Phe Asn Ser Thr Trp Asn Asn Asn Thr Glu Gly Ser  
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 Asn Asn Thr Glu Gly Asn Thr Ile Thr Leu Pro Cys Arg Ile Lys Gln  
 370 375 380  
 Ile Ile Asn Met Trp Gln Glu Val Gly Lys Ala Met Tyr Ala Pro Pro  
 385 390 395 400  
 Ile Arg Gly Gln Ile Arg Cys Ser Ser Asn Ile Thr Gly Leu Leu Leu  
 405 410 415  
 Thr Arg Asp Gly Gly Ile Asn Glu Asn Gly Thr Glu Ile Phe Arg Pro  
 420 425 430  
 Gly Gly Gly Asp Met Arg Asp Asn Trp Arg Ser Glu Phe Tyr Lys Tyr  
 435 440 445  
 Lys Val Val Lys Ile Glu Pro Leu Gly Val Ala Pro Thr Lys Cys Lys  
 450 455 460  
 Arg Arg Val Val Gln Arg Glu Lys Arg Ala Val Gly Ile Gly Ala Val  
 465 470 475 480

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Phe Leu Gly Phe Leu Gly Ala Ala Gly Ser Thr Met Gly Ala Ala Ser  
485 490 495

Met Thr Leu Thr Val Gln Ala Arg Leu Leu Leu Ser Gly Ile Val Gln  
500 505 510

Gln Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln Arg Met Leu  
515 520 525

Gln Leu Thr Val Trp Gly Ile Lys Gln Leu Gln Ala Arg Val Leu Ala  
530 535 540

Val Glu Arg Tyr Leu Gly Asp Gln Gln Leu Leu Gly Ile Trp Gly Cys  
545 550 555 560

Ser Gly Lys Leu Ile Cys Cys Thr Ala Val Pro Trp Asn Ala Ser Trp  
565 570 575

Ser Asn Lys Ser Leu Asp Arg Ile Trp Asn Asn Met Thr Trp Met Glu  
580 585 590

Trp Glu Arg Glu Ile Asp Asn Tyr Thr Ser Glu Ile Tyr Thr Leu Ile  
595 600 605

Glu Glu Ser Gln Asn Gln Gln Glu Lys Asn Glu Gln Glu Leu Leu Glu  
610 615 620

Leu Asp Lys Trp Ala Ser Leu Trp Asn Trp Phe Asp Ile Thr Asn Trp  
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Leu Trp Tyr

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<212> PRT

<213> Human immunodeficiency virus type 1

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			20					25					30		

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Thr Glu Val His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp  
 35 40 45  
 Pro Asn Pro Gln Glu Val Val Leu Glu Asn Val Thr Glu His Phe Asn  
 50 55 60  
 Met Trp Lys Asn Asn Met Val Glu Gln Met Gln Glu Asp Ile Ile Ser  
 65 70 75 80  
 Leu Trp Asp Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys  
 85 90 95  
 Gly Ala Gly Cys Asp Thr Ser Val Ile Thr Gln Ala Cys Pro Lys Ile  
 100 105 110  
 Ser Phe Glu Pro Ile Pro Ile His Tyr Cys Ala Pro Ala Gly Phe Ala  
 115 120 125  
 Ile Leu Lys Cys Asn Asp Lys Thr Phe Asn Gly Lys Gly Pro Cys Lys  
 130 135 140  
 Asn Val Ser Thr Val Gln Cys Thr His Gly Ile Arg Pro Val Val Ser  
 145 150 155 160  
 Thr Gln Leu Leu Leu Asn Gly Ser Leu Ala Glu Glu Glu Val Val Ile  
 165 170 175  
 Arg Ser Asp Asn Phe Thr Asn Asn Ala Lys Thr Ile Ile Val Gln Leu  
 180 185 190  
 Lys Glu Ser Val Glu Ile Asn Cys Thr Arg Pro Asn Asn Asn Thr Arg  
 195 200 205  
 Lys Ser Ile His Ile Gly Pro Gly Arg Ala Phe Tyr Thr Thr Gly Glu  
 210 215 220  
 Ile Ile Gly Asp Ile Arg Gln Ala His Cys Asn Ile Ser Arg Ala Lys  
 225 230 235 240  
 Trp Asn Asp Thr Leu Lys Gln Ile Val Ile Lys Leu Arg Glu Gln Phe  
 245 250 255  
 Glu Asn Lys Thr Ile Val Phe Asn His Ser Ser Gly Gly Asp Pro Glu  
 260 265 270  
 Ile Val Met His Ser Phe Asn Cys Gly Gly Glu Phe Phe Tyr Cys Asn  
 275 280 285

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Ser Thr Gln Leu Phe Asn Ser Thr Trp Asn Asn Asn Thr Glu Gly Ser  
290 295 300

Asn Asn Thr Glu Gly Asn Thr Ile Thr Leu Pro Cys Arg Ile Lys Gln  
305 310 315 320

Ile Ile Asn Met Trp Gln Glu Val Gly Lys Ala Met Tyr Ala Pro Pro  
325 330 335

Ile Arg Gly Gln Ile Arg Cys Ser Ser Asn Ile Thr Gly Leu Leu Leu  
340 345 350

Thr Arg Asp Gly Gly Ile Asn Glu Asn Gly Thr Glu Ile Phe Arg Pro  
355 360 365

Gly Gly Gly Asp Met Arg Asp Asn Trp Arg Ser Glu Leu Tyr Lys Tyr  
370 375 380

Lys Val Val Lys Ile Glu Pro Leu Gly Val Ala Pro Thr Lys Cys Lys  
385 390 395 400

Arg Arg Val Val Gln Arg Glu Lys Arg Ala Val Gly Ile Gly Ala Val  
405 410 415

Phe Leu Gly Phe Leu Gly Ala Ala Gly Ser Thr Met Gly Ala Ala Ser  
420 425 430

Met Thr Leu Thr Val Gln Ala Arg Leu Leu Leu Ser Gly Ile Val Gln  
435 440 445

Gln Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln Arg Met Leu  
450 455 460

Gln Leu Thr Val Trp Gly Ile Lys Gln Leu Gln Ala Arg Val Leu Ala  
465 470 475 480

Val Glu Arg Tyr Leu Gly Asp Gln Gln Leu Leu Gly Ile Trp Gly Cys  
485 490 495

Ser Gly Lys Leu Ile Cys Cys Thr Ala Val Pro Trp Asn Ala Ser Trp  
500 505 510

Ser Asn Lys Ser Leu Asp Arg Ile Trp Asn Asn Met Thr Trp Met Glu  
515 520 525

Trp Glu Arg Glu Ile Asp Asn Tyr Thr Ser Glu Ile Tyr Thr Leu Ile  
530 535 540

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Glu Glu Ser Gln Asn Gln Gln Glu Lys Asn Glu Gln Glu Leu Leu Glu  
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Leu Trp Tyr

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1          5          10          15

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Glu Ala Thr Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Asp  
 20 25 30  
 Thr Glu Val His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp  
 35 40 45  
 Pro Asn Pro Gln Glu Val Val Leu Glu Asn Val Thr Glu His Phe Asn  
 50 55 60  
 Met Trp Lys Asn Asn Met Val Glu Gln Met Gln Glu Asp Ile Ile Ser  
 65 70 75 80  
 Leu Trp Asp Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys  
 85 90 95  
 Val Thr Leu Asn Cys Lys Asp Val Asn Ala Thr Asn Thr Thr Asn Asp  
 100 105 110  
 Ser Glu Gly Thr Met Glu Arg Gly Glu Ile Lys Asn Cys Ser Phe Asn  
 115 120 125  
 Ile Thr Thr Ser Ile Arg Asp Glu Val Gln Lys Glu Tyr Ala Leu Phe  
 130 135 140  
 Tyr Lys Leu Asp Val Val Xaa Ile Asp Asn Asn Asn Thr Ser Tyr Arg  
 145 150 155 160  
 Leu Ile Ser Cys Asp Thr Ser Val Ile Thr Gln Ala Cys Pro Lys Ile  
 165 170 175  
 Ser Phe Glu Pro Ile Pro Ile His Tyr Cys Ala Pro Ala Gly Phe Ala  
 180 185 190  
 Ile Leu Lys Cys Asn Asp Lys Thr Phe Asn Gly Lys Xaa Pro Cys Lys  
 195 200 205  
 Asn Val Ser Thr Xaa Gln Cys Thr His Gly Ile Arg Pro Val Val Ser  
 210 215 220  
 Thr Gln Leu Leu Leu Asn Gly Ser Leu Ala Glu Glu Glu Val Val Ile  
 225 230 235 240  
 Arg Ser Asp Asn Phe Thr Asn Asn Ala Lys Thr Ile Ile Val Gln Leu  
 245 250 255  
 Lys Glu Ser Val Glu Ile Asn Cys Thr Arg Pro Asn Asn Asn Gly Ala  
 Page 14

260 59331-D-PCT-US.ST25 270  
265

Gly Asp Ile Arg Gln Ala His Cys Asn Ile Ser Arg Ala Lys Trp Asn  
275 280 285

Asp Thr Leu Lys Gln Ile Val Ile Lys Leu Arg Glu Gln Phe Glu Asn  
290 295 300

Lys Thr Ile Val Phe Asn His Ser Ser Gly Gly Asp Pro Glu Ile Val  
305 310 315 320

Met His Ser Phe Asn Cys Gly Gly Glu Phe Phe Tyr Cys Asn Ser Thr  
325 330 335

Gln Leu Phe Asn Ser Thr Trp Asn Asn Asn Thr Glu Gly Ser Asn Asn  
340 345 350

Thr Glu Gly Asn Thr Ile Thr Leu Pro Cys Arg Ile Lys Gln Ile Ile  
355 360 365

Met Met Trp Gln Glu Val Gly Lys Ala Met Tyr Ala Pro Pro Leu Arg  
370 375 380

Gly Gln Ile Arg Cys Ser Ser Asn Ile Thr Gly Leu Leu Leu Thr Arg  
385 390 395 400

Asp Gly Gly Ile Asn Glu Asn Gly Thr Glu Ile Phe Arg Pro Gly Gly  
405 410 415

Gly Asp Met Arg Asp Asn Trp Arg Ser Glu Leu Tyr Lys Tyr Lys Val  
420 425 430

Val Lys Ile Glu Pro Leu Gly Val Ala Pro Thr Lys Cys Lys Arg Arg  
435 440 445

Val Val Gln Arg Glu Lys Arg Ala Val Gly Ile Gly Ala Val Phe Leu  
450 455 460

Gly Phe Leu Gly Ala Ala Gly Ser Thr Met Gly Ala Ala Ser Met Thr  
465 470 475 480

Leu Thr Val Gln Ala Arg Leu Leu Leu Ser Gly Ile Val Gln Gln Gln  
485 490 495

Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln Arg Met Leu Gln Leu  
500 505 510

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Thr Val Trp Gly Ile Lys Gln Leu Gln Ala Arg Val Leu Ala Val Glu  
515 520 525

Arg Tyr Leu Gly Asp Gln Gln Leu Leu Gly Ile Trp Gly Cys Ser Gly  
530 535 540

Lys Leu Ile Cys Cys Thr Ala Val Pro Trp Asn Ala Ser Trp Ser Asn  
545 550 555 560

Lys Ser Leu Asp Arg Ile Trp Asn Asn Met Thr Trp Met Glu Trp Glu  
565 570 575

Arg Glu Ile Asp Asn Tyr Thr Ser Glu Ile Tyr Thr Leu Ile Glu Glu  
580 585 590

Ser Gln Asn Gln Gln Glu Lys Asn Glu Gln Glu Leu Leu Glu Leu Asp  
595 600 605

Lys Trp Ala Ser Leu Trp Asn Trp Phe Asp Ile Thr Lys Trp Leu Trp  
610 615 620

Tyr  
625